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THE IDENTITY OF *HYMENOPHYLLUM PYGMAEUM* Colenso

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ABSTRACT

Hymenophyllum pygmaeum Colenso is shown to be a synonym of *Meringium minimum* (A. Richard) Copeland.

KEYWORDS: *Hymenophyllum pygmaeum* - *Meringium minimum* - Colenso - Richard - nomenclature - synonymy - Hymenophyllaceae.

Almost immediately after its publication the validity of Colenso's *Hymenophyllum pygmaeum* (Colenso 1881) was challenged by Thomson, who, in the context of *H. minimum* A. Richard (1832), stated "I cannot see by what characters *H. pygmaeum* ... ... is to be separated as more than a variety from this species" (Thomson 1882, p.36).

Nevertheless, Field (1890), Christensen (1906), Cheesman (1906, 1925), Copeland (1937) and Allan (1961) consider this taxon, not in relation to *Meringium (Hymenophyllum) minimum*, but instead in relation to *Hymenophyllum tunbridgense* Smith or, in the case of the latter two authors, *H. revolutum* Colenso. (Subsequent to recognition by Copeland (1937) that true *tunbridgense* Sm. did not occur in New Zealand, *revolutum* Col. has been the epithet applied to the plant formerly known as *tunbridgense* in New Zealand).

Field (1890, p.66), however, misunderstood Richard's *minimum*, which he also treated as a form of *tunbridgense*. Christensen (1906, p.367) treated *H. pygmaeum* simply as a synonym of *H. tunbridgense*. Cheeseman (1906, p.940 & 1925 p.13 respectively) and Copeland (1937, p.89), though both indicated doubt, also reduced *pygmaeum* to synonymy under *tunbridgense* and *revolutum* respectively. Allan (1961, p.31), under the heading of *revolutum*, stated "The status of *H. pygmaeum* Col. ... remains uncertain." He further indicated that he had "been unable to locate any specimens so named by Colenso". In the continued absence of any part of the type material, some element of doubt regarding the

true identity of a taxon, great or small according to the other circumstances of the case, must always remain, but it is the purpose of this note to demonstrate that, evaluated in relation to the available evidence, the approach of all these five authors was perverse, and the appropriate treatment for *pygmaeum* Col. is as a synonym of *minimum* A. Richard.

We may first note that *Hymenophyllum pygmaeum* was based entirely on material received by Colenso from correspondents and, more to the point, "It has always been sent to me, from various sources, bearing the name of *'H. minimum'* " (Colenso, 1881 pp.376/7). Colenso cited six collections: *"Hab.* - On cliffs, Preservation Inlet; on rocks, Resolution Island; and on rocks at the Bealey, *J.D. Enys;* hills round Lyttelton Harbour, Westland, coast south of Hokitika, etc." The first, second and last of these are manifestly coastal South Island localities, and all three are known or probable habitats of *M. minimum.* Furthermore, though it would be unwise, in view of Colenso's punctuation, to infer from the evidence of Colenso's article alone, that Enys was also responsible for the collection from Resolution Island, the fact that Cheeseman* (1906, p.939 & 1925, p.13) indicates "!" that he had seen an Enys collection of *minimum* from this locality makes it a fair inference that Enys did in fact send Colenso true *minimum* from Resolution Island. Lyttelton Harbour might seem at first sight an improbable location for *minimum,* but it was recorded from Rapaki by Potts in 1882, and has only very recently been discovered in two other localities on the Port Hills (Lovis & Daellenbach, in press), whereas it has not yet been possible to confirm, either in the herbarium or the field, various records for *'tunbridgense'* on the Port Hills. The identity of the remaining two citations is more equivocal. 'Westland'**, *tout seul,* is too uninformative for any conclusion to be drawn, while there are no other records known to me of *M. minimum* from the vicinity of the Bealey.

* I have now myself seen an Enys specimen of *minimum* from Resolution Island in OTA. (Note inserted in proof.)

** I am grateful to Dr Patrick Brownsey of the National Museum for drawing my attention to the presence there of a collection (WELT P5939) localised as "Commissioner's Bluff, Okarito, Westland, 1878. A.H." in Hamilton's hand. Regarding this collection, Dr Brownsey has commented (Brownsey 1979, p.257) "Although not from the Colenso Herbarium, this specimen may be a duplicate of one sent to Colenso from which the original description was drawn up... Hamilton sent many other plants to Colenso and it is likely that he was one of the suppliers in this case." The date (1878) would be consistent with this collection being the source of the material localised only as "Westland" by Colenso. It is also of interest and relevance that whereas Hamilton has written the collection data in ink on a label bearing the printed name "HYMENOPHYLLUM MINIMUM A. Rich.", an unidentified hand has crossed out *"minimum"* and written below, in pencil, *"pygmaeum"*. I have seen the specimens which are undoubtedly of *M. minimum (cf.* Cheeseman, 1906, p.139 & 1925, p.13).

Colenso's description of his new species is detailed, occupying 18 lines of text. Most significantly, he writes of the

"involucre... ... bearing a few scattered soft spinulose processes" as well as the valves being "fimbriated with 14-17 translucent flexuose and subulate long green teeth or cilia". These spinulose processes, borne on the *surface* of the involucre, are otherwise unique to *M. minimum*.

Not only Thomson, but more recently Copeland (1937, p.90) recognised that "the description of *H. pygmaeum*... is very like that of *H. minimum*". Copeland was clearly inhibited from drawing an otherwise obvious conclusion because "Colenso, however, was very positive that they are distinct and not nearly related." Colenso was indeed very emphatic on this point, claiming that his species "has scarcely any affinity with A. Richard's plant *H. minimum*, which is altogether distinct, belonging to a widely different natural section of the genus Hymenophyllum". This is a sweeping claim, which Colenso does not substantiate.

On the basis of Colenso's article alone one is somewhat at a loss to explain his confidence that the specimens in his possession were not Richard's species, but on examination of the figure (pl.14, fig. 2, reproduced here as Fig. 1) in the atlas accompanying Richard's text, the reasons become more evident.

Just as Colenso describes it, the habit figure (2) shows "full-sized fronds, four of them singly arising from the same rhizome, and all remarkably alike, and quite symmetrical... ... each pinnatifid frond possessing five pairs of involute segments". But at this point, Colenso's accuracy of observation deserts him. Firstly, the two lefthand fronds in fig. 2 show only one involute pinna; the other nine pinnae are flat and imbricately arranged. The other two fronds do show the four lower pinnae on one side of the frond as involute, but on the other side only the lowermost is involute, the rest are imbricate. (Fig. A is almost certainly an enlargement of one of this pair of fronds; to be precise, the one more nearly directly above A on the plate. Its pinnae show the same pattern.) Secondly, he describes "the lowermost pair {of segments as} being deeply and falcately cut nearly to the base". Such a division is clearly shown on one side of the frond depicted in enlargement in fig. A, but equally clearly *not* on the other. No such divisions are evident in fig. 2 (and, of course, if the lowermost of five pairs of pinnae were so divided, *six*, not five, segments would be visible!).

One of the most distinctive features of *Meringum minimum* is the asymmetry of the fronds. The arrangement of the pinnae is alternate, not opposite. It is understandable that Colenso, if he accepted fig. 2 as a literally accurate representation, might conclude that this very symmetrical plant was not identical to the specimens sent by his correspondents. But with the exception of one characteristic (involucral teeth, see below), the accuracy of the figures increases with their scale of magnification. Fig. A shows an element of asymmetry, and is closer to nature than fig. 2, to which one must ascribe an understandable measure of artistic licence. An artist unfamiliar with the plant in nature, attempting to give a simulation of life to dead fragments of a tiny plant, has provided the plant with a degree of symmetrical elegance which in life it does not possess.

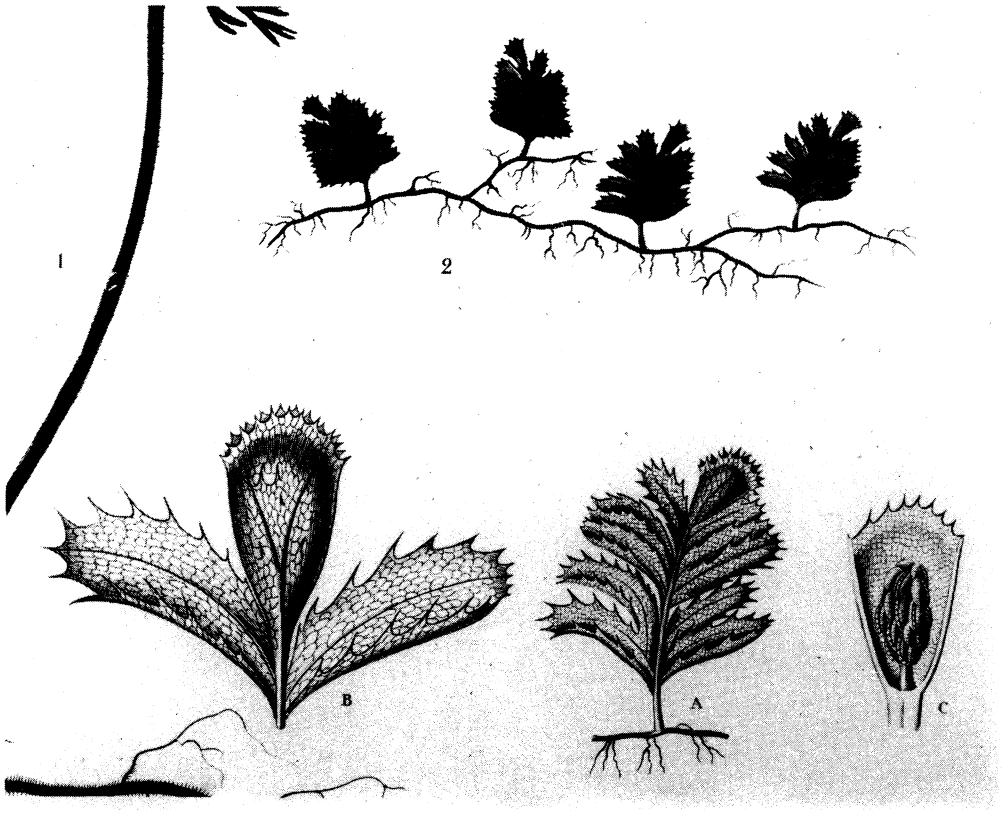

Fig. 1. Original illustration of *Hymenophyllum minimum* Richard. Part of Plate 14 of the Atlas of figures accompanying 'Voyage de...l'Astrolabe ...sous le commandement de ... D'Urville. Botanique', par A. Lesson & A. Richard, 1832.
(Shown here is only the bottom right-hand quarter of the plate, fig. 2. The rest of the plate, fig. 1, displays *Hymenophyllum scabrum*).

Another feature of the original description and depiction of *Meringium minimum* evidently misled Colenso, who correctly describes Vauthier's drawings as showing that "the involucre possesses very short, sharp rigid teeth" (1881, p.379). This is consistent with Richard's text (1832, p.92) "valvis margine dentatis", but not with the actual plant, *minimum* verito, in which the margin of the indusism valves is deeply laciniate with, exactly as Colenso describes for *Hymenophyllum pygmaeum,* "flexuose and subulate long green teeth or cilia" (*l.c.*, p.376). Vauthier's fig. B shows in enlargement the two uppermost pinnae and a sorus, depicting accurately and very clearly the shape, involution and marginal teeth of the lamina segments and the spines on the surface of the indusium valves, but the teeth on the margins of the valves are disproportionately small in relation to the rest of the figure and almost triangular in shape. In this particular respect neither Richard's description nor Vauthier's figures accurately represent

minimum, but in spite of Colenso's contrary opinion, this discrepancy is not sufficient reason to suppose that Richard's species might not be identical with the plant generally understood to be *minimum.* Apart from the involucre margin and the pinna arrangement, Vauthier's figures are a faithful and praiseworthy representation of *minimum,* depicting the diagnostic features of terminal solitary sori and spinulose surface of the involucre.

It should further be noted, with respect to the identity of *minimum* Richard, that though Copeland (1937, p.63) writes "I have seen no original specimen", he gives his reasons why he is convinced that van den Bosch (1863) must have had access to original material; "because he cites Herb. Franq. and notes "bona" as to Richard's figures, and because his unpublished notes amplify these". He continues "By means of his (van den Bosch's) sketches, ..., I can confirm the identification of a Stewart Island collection, Kirk 574, in U.S. Nat. Herb."

In evaluating Colenso's assessment of the material in his possession in relation to Richard's description and accompanying figures, Colenso's capacity for recognising and describing new species must be remembered. It is not going too far to say that his activities in this direction are notorious. A great deal of time has been spent by subsequent taxonomists in sifting his descriptions in order to isolate the few genuine new species from a welter of taxa doomed to synonymy.

The correct allocation of *Hymenophyllum pygmaeum* has remained unresolved so much longer than most of Colenso's synonymous species principally because of, firstly, the taxonomic difficulty of the group to which it belongs, and secondly, the emphatic confidence of Colenso's declaration that his new species was certainly not identical with the *H. minimum* of Richard.

In conclusion, we note firstly that all the collections cited by Colenso as *Hymenophyllum pygmaeum* were sent to him as *minimum,* and that judging from their localities of origin, it is reasonable to assume that the greater part, if not all, of them were in fact *minimum* as understood by Richard and all later authors, with the exception of Colenso and Field. Secondly, and more importantly, not only is Colenso's description generally concordant with *minimum,* but more specifically, it is clear that Colenso observed and accurately described in whatever part of the material in his possession he used as the basis for his description the one character that is definitively diagnostic of *minimum.* Therefore the correct taxonomic treatment for *Hymenophyllum pygmaeum* Colenso is as a synonym of *Meringium minimum* (A. Richard) Copeland.

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